

Conference Abstract

Zoonom: Gathering the concepts of zoological nomenclature in an electronic thesaurus

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Abstract

Zoological nomenclature, the discipline of taxonomy responsible for managing the scientific names of animal taxa, takes its roots in the work of Carolus Linnaeus, and has been governed by an international Code since the beginning of the 20th century. Like any other scientific discipline, it has developed its own vocabulary, which has gotten increasingly complex with time.

However, it sometimes lacks clarity in its terminology. New terms have been defined by various authors to reduce ambiguity or replace existing problematic terms. To make these new terms, but also terms used by the *International Code of Zoological Nomenclature* (the Code), accessible, an electronic Simple Knowledge Organization System (SKOS) thesaurus was created, called *Zoonom*.

Zoonom was built using an open-source thesaurus-making software, *Opentheso*. *Opentheso* complies with the most recent standards i.e., ISO 25964-1 (International Organization for Standardization 2011) and ISO 25964-2 (International Organization for Standardization 2013). The thesaurus is shared online through the LOTERRE platform (Linked Open TERminology REsources). SKOS is part of the Semantic Web family of standards and a World Wide Web Consortium (W3C) recommendation for controlled vocabularies and thesauri. It is itself based on the Web Ontology Language (OWL). See some applications of SKOS and semantic web for biodiversity in Larmande et al. 2013.

Zoonom contains 920 terms (excluding terms from the same word families, like plurals), distributed within 794 concepts, 404 etymologies and 58 references. It is divided into 20 collections and covers every aspect of zoological nomenclature, from theoretical nomenclature to taxonomic publications. Find the link to a downloadable file in the description of Zoonom.

The thesaurus can be used as a classical glossary, using the search bar, or in alphabetical order, but this is not its only feature. Gathering different terms under a single concept also offers the possibility of refining the terminologies, and thus accessing a less ambiguous equivalent term. A richly developed vocabulary enables better labeling of particular names or situations in databases, software, or in the context of Semantic Web.

As an example, let's focus on the concept of *nomen dubium*. It is defined by the Code as "a name of unknown or doubtful application" (International Commission on Zoological Nomenclature 1999). However, at least four different major categories of *nomina dubia* exist. Names attached to multiple types belonging to potentially different taxa; names attached to a problematic type; names attached to a non-identifiable type; and names not clearly available because their conditions of availability have not been checked. Concepts have been created to distinguish each of these situations: Synaptonym, Anaptonym, Nyctonym (Dubois 2011) and Aporioplonym. The nomenclatural treatment of these names varies. Some may need the designation of a neotype (nyctonym) or if relevant, lectotype (synaptonym); others may need a referral to the Commission, while some will stay dubious, or even end up being deemed unavailable (aporioplonym). The simple tagging "nomen dubium" gives little to no information about the exact status of the name, only implying that it is not valid. A better description of the scientific names in databases is beneficial both for information retrieval and intercommunication.

Zoonom is destined to be updated at least once a year. Any relevant propositions of new concepts are highly welcomed. We are especially looking for terms widely used in a part of the taxonomic community, or associated with a particular taxon, but unknown or obscure outside of these applications. Crosslinking the common concepts with the NOMEN OWL ontology (Yoder et al. 2017) and Wikidata might be implemented in the near future.

In conclusion, Zoonom should help provide a better understanding of zoological nomenclature and assist in the curation and management of databases by offering improved tags and definitions.

Keywords

SKOS, RDF, vocabulary, Opentheso

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